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Assessment of Levels of Occupational Stress among the Intensive Care Workers in a Selected Hospital in Lagos State

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Working in an Intensive Care Unit (ICU) comes with a great deal of physical, emotional, and psychological strain that can get worse with time if not properly managed. Numerous factors contribute to the extreme levels of stress experienced by healthcare professionals, such as long and demanding work hours, the burden of paperwork and legal matters,

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the disruption of work-life balance, the complexity of shared decision-making, and the high expectations placed on ICU workers by both patients and carers. Some outcomes of occupational stress among intensive care workers include bad safety culture, poor standard of care for patients and depression.

Research Objective: The Purpose of the study was to ascertain the levels of occupational stress among the intensive care workers of a hospital.

Methodology: The research was a cross-sectional descriptive study conducted in Lagos State University Teaching Hospital (LASUTH). An aggregate of 108 intensive care workers were sampled for the study. A pre-tested, semi-structured self-administered questionnaire was used to gather the data, and the statistical package for social sciences, SPSS version, was used for analysis. The means and standard deviations, or the median and interquartile range, were used to express continuous variables. The expressions for categorical variables were frequencies accompanied by percentages. The study employed chi square statistics to evaluate the correlation between categorical variables.

Results: There is an average prevalence of stress among intensive care workers of LASUTH.

Recommendation: Staff sshould undergo training on stress handling, in order to be able to manage their individual stressors and reduce the overall stress.

Keywords: Occupational stress levels and intensive care personnel.

1. INTRODUCTION

Occupational stress, also known as job stress, is a widespread, all-encompassing, and intricate phenomenon that affects all professions, though it affects some more than others. Yan et al. [1] claim that occupational stress is a serious worldwide public health issue. Stress is a well-known and inevitable concept that refers to an unfavorable physical and/or emotional response that an individual displays as a result of their resources and ability falling short of what is required of them in their line of work [2]. At first, occupational stress may encourage and improve performance at work, but prolonged exposure can have a negative impact on an individual's health and productivity. This is because they are exposed to daily high levels of stress at work and experience a far higher rate of emotional distress than workers in other fields. As a result, health care practitioners are especially vulnerable to the negative effects of stress [3]. Numerous factors contribute to the extreme levels of stress experienced by healthcare professionals, such as long and demanding work hours, the burden of paperwork and legal matters, a disruption in work-life balance, the complexity of shared decision-making, and the high expectations placed on these workers by both patients and carers (Kompanje & Bakker, 2017). Stress has such terrible side effects and lowers the exceptionally high levels of care that patients expect. Thus, health care workers aren't the only ones who suffer from it. There are more stressful situations in hospital settings when providing healthcare than in any other setting where services are provided [4]. In a hospital setting, the intensive care unit is a sophisticated department where patients who are critically ill and bedridden receive ongoing specialized medical care. A multidisciplinary team made up of doctors, nurses, chemists, dieticians, technicians, therapists, and other support personnel makes up a typical intensive care unit. ICU workers are subjected to high levels of stress due to the complexity of patients, work procedures, and the intensive care unit (ICU) environment in a time and resource-constrained setting [5]. The physical, psychological, and emotional strain and demands faced while employed in an intensive care unit are tremendous and have only gotten worse over time.

The change in perspective in medical care from provider-focused to patient-focused care, concerns about dying patients, ethical considerations, patient pressure, and litigation fear have all contributed to the rising demands and strain. When high job demands are combined with ongoing high stress levels, the results can be varied stress reactions, low job satisfaction, low job performance, missed work, higher turnover, medical errors, higher rates of morbidity, burnout, and compromised personal health [6]. A heavier workload causes high levels of stress, which in turn causes burnout and depression in ICU personnel. An ICU team that is prone to mistakes and has strained relationships would result from depression and burnout. This would therefore lead to a low level of safety and care for patients requiring critical

care [7]. In light of this, the study's objective is to investigate the levels of occupational stress experienced by LASUTH's medical doctors and nurses who work in intensive care.

1.1 Research Objective

To determine the prevalence and levels of occupational stress among the intensive care workers.

1.2 Research Questions

What is the prevalence and levels of occupational stress among intensive care workers in the tertiary hospital?

2. LITERATURE REVIEW

2.1 Concept of Stress

The Latin word "stringere," which means, "draw tight," is where the word "stress" originates [8-9]. Additionally, [9] notes that the term "stress" was more closely linked to adversity, challenges, or some other affliction in the 14th century. Accordingly, Smyth et al. [10] define stress as an individual's reaction or reply to something as an image of helplessness in the face of something that will result in the experiencer feeling restless, tense, frustrated, enraged, and a host of other unpleasant conditions in their mental, physical, and behavioral states. Fink (2016) reports that stress has been dubbed the "Health Epidemic of the 21st Century" by the World Health Organization due to its devastating effects on both physical and mental health. Similar to this, stress is described by Newbegin [11] as a condition of mental or emotional strain brought on by difficult or unfavorable life circumstances. Furthermore, stress can be defined as an incongruous state that is offset by a multifaceted range of physiological and behavioral responses that attempt to maintain or restore the compromised state of equilibrium; these responses are collectively known as the adaptive stress [12]. When an individual's opinion of the demands made by outside stimuli exceeds their ability to successfully oversee, reduce, or alter those demands, stress is experienced [13]. According to Oladinrin et al. [8], stress can be extremely destructive when it spirals out of control.

2.2 Classification of Stress

The different types of stress are stated as follows:

Acute Stress: Acute stress is the kind that affects people's ability to maintain mental equilibrium [12]. This kind of stress manifests quickly and frequently as expected. The fact that this stress passes quickly is one of its key advantages. However, in order to get over this stress, one must be informed about strategies and tactics. Additionally, these are required to support wellbeing and good health [14]. Acute stress causes the body to become stressed, but relaxations techniques help reduce this stress. It is widely acknowledged that people of all ages and backgrounds practice a variety of relaxation techniques, including yoga and meditation [14].

Episodic Acute Stress: The kind of stress that affects people's mental balance is called episodic acute stress (Hadiansyah et al., 2019). This kind of stress manifests quickly and frequently as expected. The fact that this stress passes quickly is one of its key advantages. However, in order to get over this stress, one must be aware of the methods, techniques, and strategies that are required to do so [15]. This particular form of stress will negatively impact the individuals' psychological and physical well-being.

Joint pain, heart conditions, high blood pressure, low blood pressure, vocabulary loss, improper word usage, and other physical health issues are among the many kinds that occur. However, anxiety, depression, rage, and frustration are some of the different psychological issues that arise [14]. People who experience this kind of stress typically alter both their personality traits and the surrounding circumstances. Typically, this would make them more agitated [12]. However, in order to get over this stress, one must be knowledgeable about the protocols and approaches. Moreover, these are considered essential for fostering well-being and kindness.

Chronic Stress: The kind of stress that people experience on multiple occasions throughout their lives is known as chronic stress. This particular form of stress will negatively impact the individuals' psychological and physical well-being. Moreover, burnout might also strike them [15]. People's physical and mental health are the main areas where chronic stress has an impact. Numerous physical health issues can arise, including joint pain, heart conditions, hypertension, hypotension, and other conditions [14]. Conversely, there are a variety of psychological issues that arise, including anxiety, depression, rage, and frustration. When people experience this kind of stress, learning relaxation

techniques not only make it easier for them to manage ongoing stress, but it also enables them to carry out their daily responsibilities and duties in a well-planned, efficient, and pleasant way (Hadiansyah et al., 2019).

Emotional Stress: When compared to other forms of stress, emotional stress can be greater and painful [16]. Emotional stress arises when employees face excessive work pressure at their place of employment or encounter challenging circumstances and interpersonal relationships with coworkers, friends, family, supervisors, employers, or other individuals (Hadiansyah et al., 2019). Individuals' physical and psychological health are negatively impacted when they experience significant levels of stress [17]. Therefore, it is imperative that people are knowledgeable about the steps and strategies needed to reduce emotional stress and keep it from becoming more serious.

Battling Burnout: Individuals who experience burnout feel as though they have no control over their lives [14]. Burnout is a form of stress. It appears to be accepted in both work environments and institutions of learning at all levels that people in all positions strive to perform well in their roles and produce the intended results (Hadiansyah et al., 2019). However, there are a variety of issues and difficulties that people face, such as not knowing the proper procedures and methods, not having enough opportunities for advancement, receiving inadequate compensation, not having enough resources, facilities, or amenities, not being able to meet with employers and supervisors because of their hectic schedules, inadequate procedures for grievance redressers, a lack of use of contemporary, scientific, and inventive methods, an inability to enrol in programs for training and development, challenges in carrying out job duties, and pressure to perform well at work [14]. In addition to these issues, burnout arises when members of the organizations are unable to solve problems by themselves and do not receive assistance from others.

Physical Stress: Physical stress is defined as stress that affects a person's physical health [15]. Physical stress can be caused by many different things, such as different kinds of diseases and health issues, cuts, injuries, infections, toxins, poor light or electricity, exhaustion, low oxygen levels, deficiencies in vital nutrients, food sensitivities and allergies, unhealthy diets, dehydration, substance abuse, dental issues, and musculoskeletal misalignments and imbalances [17].

Psychological Stress: Stress resulting from a variety of psychological issues, such as anger, depression, trauma, anxiety, and frustration, is referred to as psychological stress. People encounter a variety of circumstances in both their personal and professional lives, which can lead to psychological stress [17]. Individuals' physical and psychological health conditions are impacted when they experience significant psychological stress [14]. After going through this kind of stress, people can improve their analytical, critical thinking, and problem-solving skills in addition to learning how to manage physical stress by practicing different relaxation techniques.

2.3 Concept of Occupational Stress

Occupational stress is defined by the International Labour Organisation [2] as a detrimental physical and emotional reaction resulting from a disparity between the perceived demands and the perceived assets and skills of individuals to meet those demands. According to Thapa and Pradhan (2024), occupational stress is a detrimental emotional and physiological reaction that arises when an employee's needs, resources, or capacities are not met by the demands of their job. According to Akanji [18], occupational stress is a mental and physical illness that can have detrimental effects on both individuals and organizations. According to Van Mol and Benoit (2015), stressors can include anything from conflicting demands at work, an excessive amount of responsibilities, end-of-life concerns, and interpersonal problems. Occupational stress, or stress brought on by one's workplace, is one of the most serious health problems in the world. Stress at work can lead to low job satisfaction and poor performance, which can motivate an employee to quit [19]. In a stressful work environment, an individual's ability to focus, pay attention, and make decisions will be greatly diminished [20]. . Workplace stress may have a negative effect on patient treatment outcomes and clinical care. Occupational stress in the healthcare industry is caused by a variety of factors, such as long hours, challenging workplaces, shift work, heavy workloads, insufficient preparation, a lack of social support, and a staffing shortage [21]. Additional stressors may include low pay, a lack of inspiration and positive feedback, contact with high-risk tasks and the COVID-19 pandemic and

low job satisfaction, according to studies [22]. Regular breaks are a matter employers should encourage their staff to take, according to Ekong and Ogunbanwo [23].

Taking regular breaks will prevent you from getting tired and worn out. This will assist in preventing illnesses and injuries even more. Employees who take breaks are more focused and awake. Regular exercise can help lower stress and obesity, according to Adeyemi, Adeyemi, Ogunbanwo, and Akinosi [24].

2.4 Intensive Care Unit

The Intensive Care Unit (ICU) is a dedicated area within a medical facility that offers patients with severe and potentially fatal conditions and injuries, such as sepsis, multiple organ failure, trauma, and acute respiratory distress syndrome (ARDS) intensive medical treatment and attention [25]. In order to maintain normal body functions, health workers in intensive care units must constantly and closely monitor their patients while supporting them with specialized equipment and medications [26]. Every healthcare institution staffs the unit with highly skilled physicians and nurses who specialize in providing care for patients who are critically ill. Complex medical cases carried out in ICUs and access to cutting-edge medical tools and supplies not usually found elsewhere set them apart from regular hospital wards [27]. Seriously ill patients are typically housed in intensive care units, which have a restricted number of beds. Critically ill patients receive both medical and surgical care from it [26].

2.5 Maslach theory of Burnout

The theoretical foundation of this study is the Maslach theory of burnout. The importance of Maslach's theory of burnout in this study can be seen in its emphasis on occupational stress as a result of occupational dynamics like work conditions and relationships [28]. The dynamics of human emotions were initially the center of the Maslach theory's theorizing, which subsequently sparked interest in occupational burnout (Maslach, 1993). The Maslach theory of burnout states that when a worker's demands and those of their occupation are inconsistent, occupational stress and burnout result [29]. Put another way, a worker's mismatch with the demands of their job leads to burnout and stress.

The person performing the job and the demands of the job must match or be in "sync" for burnout to avoid happening as the theory suggests. According to Dall'Ora et al. [28], the Maslach theory of burnout identifies six risk factors—workload, lack of control, reward, social connection, fairness, and values—that may result in a mismatch between an individual and their job. Fundamentally, this theory uses three models—emotional exhaustion, cynicism or depersonalization, and inefficacy—to further clarify occupational burnout and stress [30], of the three dimensions, emotional exhaustion is the most obvious and conspicuous.

This dimension is typified by emotional stress-related symptoms like irritability, moodiness, and agitation, which can lead to an incapacity to manage the psychological and physical demands of the work [29]. Therefore, in the framework of this model, the theory links emotional incompetence to physical competence and, consequently, to job competence. Stated differently, this aspect of occupational burnout and stress leads to people acting inconsistently with their work, and those who experience it find it difficult to handle the demands of their jobs [28]. Cynicism and depersonalization make up the second dimension or model.

In relation to the model, this aspect of occupational stress and burnout causes people to feel somewhat depressed and to distance themselves from their work [28]. According to the theory, this happens when an employee can't handle the demands of their job on a daily basis, usually due to emotional exhaustion. Inefficacy, or diminished personal accomplishment, is the final dimension [30]. This mostly happens when employees conduct their own professional assessments, particularly in regard to job performance, and the results are unfavourable, leading to feelings of incompetence on the part of the worker.

Personal achievements suffer as an outcome of the unfavourable assessment of themselves. According to this theory, burnout has a detrimental effect on coworkers, which may lead to conflict, as well as negative effects on job performance, turnover, and tense work relationships. According to this theory, working through burnout and stress is a direct cause of poor job performance [30].

2.6 Empirical Review

Aserri, Baddar, and Aserri [31] looked into the factors that contribute to occupational stress and how common it is among nurses who work at the

Asser region hospital. Nurses from a range of age groups who worked in various departments participated in the study and had their sources of stress evaluated. Targeting nurses working in Southern Saudi Arabia's primary hospitals in the Asser region, a cross-sectional descriptive research was carried out. To calculate the anticipated average stress rate among nurses, 217 study samples of nurses were needed. A pre-structured, self- administered survey used to gather data. The results demonstrated a strong correlation between the personal and professional traits of nurses and their stress level. In Beijing, China, Yan et al. [1] assessed the overall incidence of occupational stress among staff members in the manufacturing, transportation, and electricity, heat, gas, and water production and supply (EHGWPS) sectors. A cross-sectional study involving 13,867 workers was carried out. Male employees who worked in manufacturing, had more work experience, and had less education were more susceptible to high levels of occupational stress, according to a logistic regression analysis. Subsequent examination of the four sub-dimensions of occupational stress revealed that higher scores in job stressors, responses to stress, social support, along with job stress & social support were linked to male employees, older adult employees, workers with lower educational attainment, and workers with longer workdays. Additionally, employees who were widowed or divorced scored higher on occupational stress. More specifically, Ayala and Carnero [32] found that burnout in the areas of depersonalization and emotional exhaustion was more likely in younger people. In Rivers State, Onyiri, Amadi, Sunday, and Chinda [33] looked into the causes and frequency of occupational stress in the healthcare industry. The study employed a cross-sectional, descriptive design. The study's conclusions demonstrated, among other things, that there was no statistically significant variation in the mean assessment of the stress level endured by healthcare workers in Rivers State depending on their age or marital status. According to the study's findings, age and marital status did not significantly affect the amount of stress experienced by healthcare workers in Rivers State. According to Maitei et al. [34], there is a significant risk of burnout stress among doctors (25.9%) and nurses (22.54%) who function in hospitals with a range of ages. The average years of work experience for healthcare workers was 16.95 + 11.73, meaning that they have more than 10 years of experience. Additionally, more than 60.95% of them worked over five overtime hours per week. On the other hand, working overtime exacerbates occupational stress, and burnout is a sign of stress from work-related experiences. As evidenced by hospital employees, the work experiences of healthcare professionals may contribute either directly or indirectly to occupational stress.

Research by Sasikala and Rami [35] demonstrated a statistically significant increase in stress levels among older workers. There is a correlation between age and the rate of occupational stress, as evidenced by the possibility that older healthcare employees experience occupational stress at a higher rate than younger adults. Additionally, it appears that a nurse's work experience predicts and contributes to occupational stress tendencies, as evidenced by the observation of these tendencies in nurses, particularly in specialty hospitals. Contradictory research by Daggat, Molla, and Belachew [36] claimed that nurses with 11–20 years of total nursing knowledge encounter experience higher levels of stress, which may be related to age distribution. Employees who work in the emergency room, outpatient department, or on duty may exhibit higher levels of stress than those who work in the wards. This could be because outpatient unit staff members rotate jobs randomly and frequently, or because their shifts are brief. Stress and job satisfaction might be connected. Furthermore, the research by Alosaimi et al. [37] supports the finding that over 93% of male health care workers (including consultants) are married, roughly 77% of them have three or more children, and 68% of HCWs report sleeping fewer than six hours a day. These factors are significantly linked to stress, which is why many of them seek professional psychological assistance to manage their abundant situation. Healthcare workers who are married and experience stress are more likely to experience heart disease, depression, anxiety, and hypertension, among other symptoms. These conditions are indicative of a tendency for healthcare workers to experience occupational stress [37]. Conversely, a study conducted in 2016 by Adzakpah, Lema, and Fiadjoe on occupational stress in Ghanaian hospitals revealed that the facility's nurses experienced higher than average levels of occupational stress. Moreover, the outcome demonstrated that managing a sizable patient population by yourself, insufficient staffing, no intermission during the workday, working late into the night,

caring for patients without family, limited prospects for advancement, and challenging patients were all contributing factors.

3. METHODOLOGY

3.1 Research Design

The research was a cross-sectional descriptive study conducted at a hospital.

3.2 Study Population

Medical professionals and nurses employed by Lagos State University Teaching Hospital (LASUTH) in the post-operative care unit/recovery room, intensive care unit (ICU), and critical care unit (CCU) participated in the study.

3.3 Study Area

The Lagos State University Teaching Hospital (LASUTH), in Ikeja, Lagos, Nigeria, is home to the Critical Care Unit (CCU), Intensive Care Unit (ICU), and Post-Operative Recovery Unit/Recovery Room where this study was carried out. LASUTH is located on Oba Akinjobi Road in Ikeja, the state capital of Lagos, between latitudes 6° 35' 47.44" N and longitude 3° 20' 31.38" E (Fig. 1). With an updated population estimate of 21 million. Lagos is the most populous city in both Nigeria and Africa. Lagos is a metropolitan state located in the southwest of the country (Lagos State Government, 2017a). The government of Lagos State owns LASUTH, a tertiary hospital. It began as a cottage hospital in 1955 and went through two upgrades to become a world class teaching hospital in 1999. In 2001, its name was changed officially from Ikeja General Hospital to LASUTH (Lagos State Government, 2017b; LASUTH, 2016). It has about 600 beds and provides care in the major specialties of medicine to a large selection of patients in Lagos and its environs. Together with the Lagos State University College of Medicine (LASUCOM) which it shares boundary with, it serves as an undergraduate and postgraduate training ground for students in Medicine, Nursing and other paramedical fields. In its critical care unit, intensive care unit, and post-operative care/recovery room, LASUTH provides patients with intensive care. The 14-bed critical care unit at LASUTH is a state-of-the-art facility that includes an operating room and a 2-bed dialysis unit. It is next to the emergency department for surgery. Integrated into the surgical emergency department, the intensive care unit has four beds. The seven-bed post-operative unit/recovery room is integrated into LASUTH's main operating theatre.

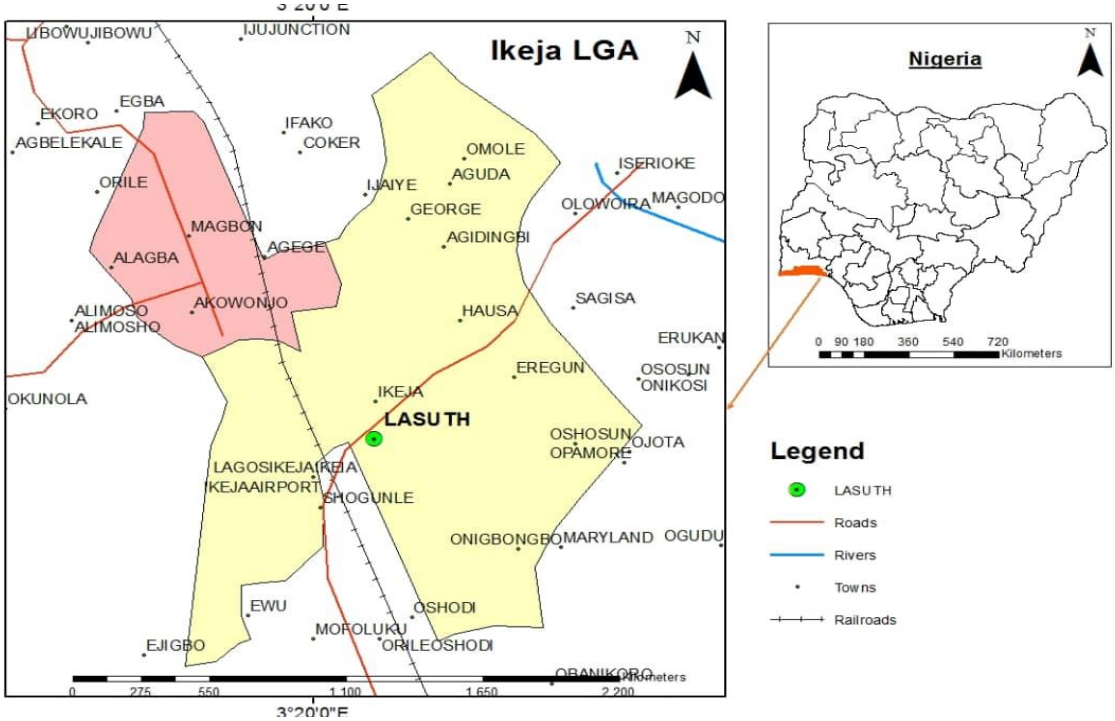

Fig. 1. Map showing the study area
(Source: Google maps, 2024)

3.4 Sample and Sampling Technique

All the staff intensive care workers (medical doctors and nurses) who worked in the post-operative recovery room, intensive care unit, and critical care unit (CCU) during the study period were included in a non-probability total population purposive sample. When there are a limited number of researchers who meet particular selection criteria, a total population selective sampling method is employed to increase the depth of understanding on the research situation or topic of interest by including all subjects. In Etikan, Musa, and Alkassim [38]. All of the intensive care workers (32 doctors and 76 nurses) who gave their consent and fulfilled the selection criteria were given a total of 108 questionnaires over the course of a month.

3.5 Inclusion Criteria

Every staff, physician and nurse who worked in the intensive care unit, critical care unit, and recovery room.

3.6 Exclusion Criteria

Physicians and nurses undergoing training or temporary assignments in the intensive care unit, critical care unit, and recovery room.

3.7 Nature and Sources of Data Collection

An independently managed semi-structured questionnaire was used to collect primary data for investigating the study's objectives. Secondary data was gathered in the interim from pertinent textbooks, original articles, and review articles. Academic Online search engines were also employed.

3.8 Data Collection, Duration and Instrumentation

Information was gathered using pre-tested semi-structured questionnaire in tandem with [39]. Participants who gave their consent were given a self-administered questionnaire. 108 questionnaires in all were distributed. A total of 108 intensive care workers—31 physicians and 77 nurses—responded (100 percent response rate); however, seven questionnaires were not fully completed. In the end, 101 questionnaires were examined. Five physicians and five nurses who worked in the intensive care unit of the Lagos State University Teaching Hospital (LASUTH) completed an initial pre-test of the questionnaires. In accordance with their complaints and responses, the survey form was modified accordingly. The questionnaire's instruments were separated into three sections, totaling 39 questions.

Section A: Socio-demographic and Job Characteristics: There are nine questions in this section that focus on job characteristics and ten that are socio-demographic in nature. Age, gender, relationship status, number of children, belief system, occupation, greatest level of education, partner's occupation, ethnic group, and average income are some of the sociodemographic traits. The title for medical doctors and nurses, years of clinical experience, years of working in the ICU, CCU, or postoperative unit/recovery room, number of day shifts per week, the total number of night shifts per month, number of working hours per week, and predominant ICU shift type are among the job characteristics.

Section B: Determining stress level: The Depression Anxiety and Stress Scale (DASS-21) is an approved instrument that uses three subscales to measure stress, anxiety, and depression. The DASS stress subscale, which is employed in this section, has previously been adopted to measure stress levels between intensive care workers in a study [40] With an outstanding Cronbach's alpha value of 0.78 for the stress subscale, DASS-21 has also been used and approved in a Nigerian study (Coker, Coker, & Sanni, 2018). There are seven items on the 4-point Likert scale: 0 connotes ‘it didn't apply to me at all,’ 1 connotes ‘it applied to me somewhat or occasionally,’ 2 connotes ‘it applied to me a significant amount or frequently,’ and 3 connotes ‘it applied to me a great deal or most of the time’. After the addition of scores of each subscale levels and multiplying them by two, stress levels are therefore, categorized as follows: normal (0–14), mild (15–18), moderate (19–25), severe (26-33), and very severe (> 34).

Section C: Work-Related General Health: An adapted General Health Questionnaire for a Work-Related Context (GHQW) was utilized in this section. A validated instrument that has been widely used in occupational health research to measure psychological well-being and the existence of psychological distress is the General Health Questionnaire (GHQ 12)

(Jackson, 2006). An outstanding Cronbach's alpha coefficient of 0.94 was observed for its work-related context adaptation (GHQW) (Lesage, Martens-Resende, Deschamps, & Berjot, 2011). It comprises of 12 questions from the original GHQ-12, 6 of which are positively worded and 6 of which are negatively worded, with the focus being on an occupational context. There are four answers to each question. For the purposes of this study, a GHQ-12 dichotomous scoring system (0-0-1-1) was employed.

Options with low psychological distress received a score of 0, while those with high psychological distress received a score of 1. The lowest possible score is zero, and the highest possible score is twelve. Greater overall scores suggest a higher likelihood of emotional distress at work. According to Issa, Yussuf, Olanrewaju, & Abiodun (2014) and Jackson (2006), scores of less than three indicate psychological well-being, while a total cut off point of ≥3 is suggestive of probable psychological distress. A few Nigerian studies on doctor stress have made use of it (Adeolu, Yussuf, & Popoola, 2016; Issa et al., 2014). There are now 13 questions in this section after a question about whether they have any medical conditions that have been aggravated or caused by their work was added.

This study was conducted over the course of one (1) month and the activities involved enrolling participants for the study, which includes doctors and nurses, and collection of data.

3.9 Methods of Data Analysis

The statistical package for social sciences, SPSS version 20, was used for data entry and statistical analysis. Frequency tables were utilized to summarize the sociodemographic and occupational characteristics of the respondents, and suitable charts were employed to depict the categorical variables. The means and standard deviations, or the median and interquartile range, were used to express continuous variables. The expressions for categorical variables were frequencies accompanied by percentages. The study employed chi square statistics to evaluate the correlation between categorical variables. $P < 0.05$ was used to determine significance. To investigate the connection between stress and the related factors, Pearson's correlation was employed.

3.10 Instrument Reliability

Prior to data analysis, the total item questionnaire's credibility was assessed using SPSS version 20, and as presented in Table 1, it demonstrated that the 39 items of the questionnaire had a Cronbach's alpha coefficient of 0.850 which is considered an excellent Cronbach's alpha coefficient. An indication that the construct of the instruments is great, also there is no bias from the respondents perspective as well as no or limited error from the researcher's viewpoint.

Table 1. Reliability statistics

Cronbach's Alpha	N of Items
.850	39

4. RESULTS, DATA ANALYSIS AND DISCUSSION

4.1 Results and Data Analysis

4.1.1 Socio-demographic and job characteristics

The socio-demographic and occupational traits associated with the study population are disclosed in this section of the dissertation. Age distribution, gender, relationship status, number of children, spirituality, occupation, level of education, partner's line of work, ethnic group, median revenue, specialty, and designation are among the socio-demographic features that are revealed. On the other hand, job characteristics include years of professional experience, years spent working in an intensive care unit, critical care unit, or postoperative care, working hours per week, the predominant shift type in these settings, the number of day Tables 2, 3, 4a, and 4b show the information mentioned.

The respondents' socio-demographic details are displayed in Tables 2 and 3. Thirty-one (30.7%) medical doctors and seventy-nine (697.7%) nurses who work in the intensive care units of the Lagos State University Teaching Hospital comprise the respondents.

The respondents' age, gender, and marital status are displayed in Table 2. The age range of 36 to 45 years old accounts for the majority of respondents (44.6%), with 29.7% falling into the 46 to 55 year old age group. There was only one respondent who was older than 55. Compared to men (15.2%), there were more women working in

intensive care (84.2%), which may have something to do with the higher percentage of nurses (69.3%), who have a greater probability to be female than males in this field. Seventy-three percent of intensive care unit staff are married. The majority of the respondents are in their middle age, which accounts for the high percentage of married respondents. Of them, 56.4 percent had one or more children, while 44% did not have any children. The majority religion of the respondents (56.4%) was Christianity.

Table 2. Socio-demographic characteristics

		Frequency	Percentage (%)
Age	≤ 25YRS	5	5
	26-35YRS	45	44.6
	36-45YRS	29	19.8
	46-55YRS	30	29.7
	>55YRS	1	1
Gender	Male	16	15.8
	Female	85	84.2
Marital status	Single	26	25.7
	Married	71	70.3
	Separated	1	1
	Divorced	1	1
	Widowed	2	2
Number Of Children	No Children	44	43.6
	≥1	57	56.4
Religion	Islam	21	20.8
	Christianity	57	56.4
	Traditional	12	11.9
	Other	11	10.9
Level of education	Masters Degree	4	4
	Post Graduate Diploma	24	23.8
	Specialist in Training	16	15.8
	Post Graduate Fellowship	3	3
Occupation of spouse	Medical Doctor	17	16.8
	Nurse	27	26.7
	Other	57	56.4
Average income	₦50,000-<₦100,000	25	24.8
	₦100,000 - < ₦150,000	32	31.7
	₦150, 000- < ₦200,000	15	14.9
	> ₦200.000	29	28.7

Table 3. Socio-demographic characteristics

		Frequency	Percentage (%)
Ethnic Group	Yoruba	68	67.3
	Igbo	20	19.8
	Hausa	10	9.9
	Others	3	2.9
	Total	31	100

Table 4a. Job characteristics of respondents

	Frequency	Percentage (%)
Specialty		
Anaesthesia	42	41.5
Intensivist	2	2.0
Perioperative Care	39	38.6
Others	18	17.8
Designation of medical doctors		
Medical Officer	5	16.1
Junior Registrar	13	41.9
Senior Registrar	10	32.3
Consultant	3	9.7
Total	31	100

Table 4b. Job characteristics of respondent

	Frequency	Percentage (%)
Designation of nurses		
Staff Nurse	18	25.7
Nursing Officer	22	31.4
Senior Nursing Officer	6	8.6
Principal Nursing Officer	9	12.9
Assistant Chief Nursing Officer	12	17.1
Chief Nursing Officer	3	4.3
Years of experience		
<10 YRS	41	40.6
10-20 YRS	36	35.6
21-30 YRS	24	23.8
Years Of Working In The ICU/CCU/Post-Operative Unit		
<10 YRS	59	58.4
10-20 YRS	35	34.7
21-30 YRS	4	4
>30 YRS	3	3
Working Hours Per Week		
≤ 40 YRS	76	75.2
>40 YRS	25	24.8

Table 4c. Job characteristics of respondents

	FREQUENCY	PERCENTAGE (%)
Predominant Shift Type		
6 Hours	3	3
8 Hours	23	22.8
12 Hours	51	50.5
24 Hours	24	23.8
Number Of Day Shifts Per Week		
1-2	43	42.6
3-4	54	53.6
5-7	4	4
Number of night shifts per month		
1-2	30	29.7
3-4	34	33.7
5-7	9	8.9
>7	28	27.7
Total	101	100

The average income, partner's occupation, and educational attainment of intensive care workers are displayed in Table 2. The majority of critical care employees (53.5%) have a bachelor's degree and then a postgraduate certificate. While 43.5% of those surveyed were married to a medical professional or nurse, the majority of respondents (56.4%) were single. The majority of intensive care workers had monthly incomes between 100,000 and 150,000 naira.

The respondents' ethnic group is displayed in Table 3. The Yoruba Tribe made up the majority of the intensive care staff (67.3%). This might be because Yoruba's make up the majority of the population in Lagos, West Africa, where LASUTH is located.

The job features of the intensive care workers are displayed in Tables 4a, 4b, and 4c. The respondents' two most common specialties were perioperative care (17.8%) and anaesthesia (38.6%). There were two (5%) intensivists among the critical care staff. Resident physicians made up the majority of the responding physicians. Junior registrars made up 41.9% of medical doctors, while senior registrars made up 32.3%. Of the 31 responding medical doctors, there were only 3 consultants and 5 medical officers. Staff nurses made up 25.7% of the 71 responding nurses, while nursing officers made up 31.4%. This stands for the two main titles held by nurses. Out of the 71 nurses who responded, only 3 (4.3%) held the position of chief nursing officer. 58.4% of the respondents had worked in the ICU/CCU or postoperative unit for less than ten years, and 40.6% of the respondents had less than ten years of professional experience. Approximately half (50.5%) of the critical care workers worked 12-hour shifts, and a larger percentage (75.2%) worked for 40 hours or more per week. The majority of shifts worked by the respondents were 3–4day shifts per week (53.6%) and 3–4 night shifts per month (33.7%); however, a sizeable portion (27.7%) worked more than 7 night shifts per month.

4.1.2 Stress levels among intensive care workers

This section addresses the outcome of the first specific objective, which is to ascertain the stress levels of the medical doctors and nurses who work in intensive care.

The Depression, Anxiety and Stress Scale (DASS-21) stress subscale was used to measure the stress levels of intensive care workers, and the results are shown in Tables 5a and 5b. Seventy-one percent of medical doctors reported having mild to moderate levels of stress. Compared to moderate levels (32.3%), they experienced mild (38.7%) stress. Not a single medical doctor was under a lot of stress. Stress affected slightly more than half (51.4%) of the nurses who reported feeling

Table 5a. Respondents' stress levels

	Doctors	Nurses	Total
Normal	9(29.0%)	34(48.6%)	43(42.6%)
Mild	12(38.7%)	6(8.6%)	18(17.8%)
Moderate	10(32.3%)	25(35.7%)	35(34.7%)
Severe	0(%)	5(7.1%)	5(5.0%)
Total	31	70	101

Table 5b. Total stressed/non stressed respondents

	Doctors	Nurses	Total
Stressed	22(71.0%)	36(51.4%)	58(57.5%)
Non stressed	9(29.0%)	34(48.6%)	43(42.6%)
Total	31	70	101

Table 6 Occupational Stress and GHQW status

	Occupational Stress			
Variable	Stressed Freq(%)	Not Stressed Freq (%)	OR (95%CI)	P value
Ghqw				
Negative	1 (7.2%)	13 (92.9%)	24.7 (3.1198.0)	< 0.05
Positive	57 (65.5%)	30 (34.5%)		

stressed, 35.7% reported feeling moderately stressed, and five reported being extremely stressed. Table 5b indicates that 57.5% of the intensive care staff experienced stress overall.

Table 6 above reveals that there is an average level of stress 57 (65.5%) among intensive care workers in the intensive care unit staff of LASUTH. While 30 (34.4%) or workers were not stressed.

5. DISCUSSION OF FINDINGS

In this study, the Depression, Anxiety and Stress Scale (DASS) stress only subscale revealed that there is average level of stress among intensive care unit workers at (57.5 %). This is marginally higher than the 52.43% total stress prevalence found in a related Indian study on intensive care workers who use DASS [40]. The fact that there were 101 respondents in this study as opposed to 82 respondents in India for Kumar et al [40] study could help to explain this slight difference. Medical doctors in the present studies reported low levels of stress, in comparison with a study by Kumar et al. where nurses revealed higher levels of stress. This may be the result of the majority of medical doctors (72.2%) being resident physicians. Although residency training entails a mixture of work, study, exams, and research, it can be extremely stressful however, the support of nurses and the closeness of their resident to the hospital probably helped reduce the stress level. Additionally, a close level of roughly 68.4% was noted by Adzakpah [41] and the study found that work stress is above average among Ghanaian nurses, which is sufficient to highlight the fact that the majority of nurses in Ghana experience stress at work.

Conversely, Maitei et al. [34] found that physicians and nurses were notably more vulnerable to burnout and stress. According to the GHQW, the majority of employees (86.1%) indicated that they were emotionally troubled at work.

When Gheshlagh et' al. [42] surveyed 4630 Iranian nurses, 90% of them revealed a similar prevalence. Both rates were conceptualised as extremely high, even though the prevalent rate that was recorded was somewhat lower. Teixeira, Gherardi-Donato, Da Pereira, Cardiso, and Reisdorfer [43] found that 87% of nurses employed in university hospitals reported having stress in their lives. The discrepancy between the results of this study and the reviewed studies could be attributed to the availability of enough medical staff to manage hospital patients' needs in a stress-free manner. Stress at work could result from a variety of psychological issues, such as anger, depression, trauma, anxiety, and frustration, which is birthed from work stress. People encounter a variety of circumstances in both their personal and professional lives, which can lead to psychological stress [17]. The finding of this study is best underpinned by the Maslach theory of burnout. The Maslach theory of burnout states that when a worker's demands and those of their occupation are inconsistent, occupational stress and burnout result [29]. Within the framework of this model, the theory links emotional incompetence to physical competence and, consequently, to job competence. The person performing the job and the demands of the job must match or be in "sync" for burnout to avoid happening as the theory suggests [29]. Thus, it may be said that the workers who have less than 10years of work experience are likely to fall among those who experience stress while those with over 10years experience may experience greater level of stress among intensive care workers in the study area as seen in Table 3b.

Also, majority of workers in the intensive care unit in the study area fall within the ages of 26-35 years indicating that most workers may not be experienced enough to manage stress thus falling among the category of stressed workers. According to Beier et al. [44] age was positively correlated with effective coping and self-actualization. In a similar vein, Rohita et al, [45] showed that while married nurses were more likely to experience stress at work, older nurses were less likely to experience it. This shows that as nurses have aged, they may have improved coping strategies and acquired more expertise in stress management. This is consistent with the theory of age and coping, which holds that as people age, they tend to acquire better coping techniques and strategies [46].

After years of practice, older nurses may have developed a repertoire of useful coping mechanisms, including problem-solving abilities through collaboration, health management, and healthcare for patients [47-49]. Based on the Socio-demographic information revealed in the study, majority of respondents were married, and majority had a minimum of one child which could be a source of stress. One possible reason for this could be the extra duties and obligations that

accompany marriage, such as managing house chores, caring for children, and striking a balance between work and personal life [50]. Also, the majority of spouses in the study were not in the medical line thus having to face lesser stress levels and able to help relieve their spouses working in intensive care unit from the stress at work.

6. PRACTICAL IMPLICATION

Healthcare professionals working in an intensive care unit may experience less stress when they have more experience and have developed healthy coping mechanisms over time that support them in avoiding burnout and maintaining their sense of wellbeing. Younger healthcare professionals could be taught these techniques to help them become better coping mechanisms. De Oliveria et al. [51] identify the strategies revealed to reduce facets of burnout, including yoga, meditation to reduce stress, coping mechanisms training, along with resilience skills training. This is done through an integrative literature review. They also identified programmes related to mental health, such as professional identity development, psychological training, and audio-video documented mental exercises. Reduced burnout may also result from physical activity incentives, Reiki, Touch of Healing, Therapeutic Massage, Jin Shin, Jyutsu, Guided Imagery, focusing activities on the significance of job satisfaction and quality of life, and environmental modifications [44]. In trying times, spiritual activities can inspire and give hope [52-54]. Nurses can sustain a sense of well being in the workplace and efficiently handle burnout by implementing these coping skills into their daily routines. The impacts of burnout can be lessened by avoiding negative coping mechanisms (such as negative self-talk and abstaining from drugs). Examining the causes of stress and preventative measures for healthcare professionals can be the focus of future research [55-57].

7. CONCLUSION

The intensive care unit is a very demanding environment that is linked to high levels of work-related stress. The study looked at the level of occupational stress among LASUTH critical care unit workers. According to the study, stress is averagely prevalent among those who work in intensive care unit. Since stress and stressful circumstances differ among jobs and work environments, stress management strategies are crucial and should be customised to the causes and contributing factors of occupational stress among workers.

8. RECOMMENDATIONS

- Staff should undergo training on ways to appropriately handle stress so that they can take control of their personal stressors and lower their level of overall stress.
- To lessen stress and improve service delivery, provision of hospital accommodations and call rooms, especially for the intensive care nurses is relevant.

ETHICAL APPROVAL AND CONSENT

Before questionnaires were distributed, the researcher received formal approval to proceed from the Director of Clinical Services and Training at LASUTH, who granted permission for the study (appendix 2). The participants were informed about the study's purpose before giving their consent. The study's participants were not forced to participate. No personally identifiable information could be found in the data to identify the participants. The participants' privacy was preserved. There was no documented harm to the participants, aside from the time required to complete the questionnaire. Each participant gave their written consent following which the participants received a thorough explanation of the study's specifics. Those who agreed were given a pre-tested, partially structured self-administered questionnaire. (see Appendix 1).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDICIES

APPENDIX 1

QUESTIONNAIRE ON OCCUPATIONAL STRESS AMONG INTENSIVE CARE WORKERS IN A TERTIARY HOSPITAL IN LAGOS.

SECTION A: SOCIO-DEMOGRAPHIC AND JOB CHARACTERISTICS

Age (years): ≤ 25( ) 26-35 ( ) 36- 45( ) 46- 55( ) > 55( )
Gender: Male ( ) Female ( )
Marital Status: Single ( ) Married ( ) Separated ( ) Divorced ( ) Widow ( )
Number of children: No children ( ) ≥ 1 ( )
Religion: Islam ( ) Christianity ( ) Traditional ( ) Others, Specify……
Occupation: Medical Doctor ( ) Nurse ( )
Highest level of Education: Bachelor's degree ( ), Post graduate Diploma ( ), Master's Degree ( ) Specialist in training ( ) Post graduate Fellowship ( )
Occupation of partner: Medical doctor ( ) Nurse ( ) Others ( )
Ethnic groups: Yoruba ( ) Igbo ( ) Hausa ( ) others specify…….
Average Income: ₦50,000 - <₦100,000 ( ) ₦100,000 - <₦150,000 ( ) ₦150,000 - <₦200,000 ( ) >₦200,000 ( )
Specialty: Anaesthesia ( ) Intensivist ( ) perioperative care ( ) others specify……
Designation for Medical doctors: Medical officer ( ) Junior Registrar ( ) Senior Registrar ( ) Consultant ( )
Designation for Nurses: Staff Nurse ( ) Nursing Officer ( ) Senior Nursing Officer ( ) Principal Nursing Officer ( ) Assistant Chief Nursing Officer ( ) Chief Nursing Officer ( ) others specify ……..
Years of professional experience: < 10 years ( ) 10-20 years ( ) 21-30 years ( ) > 30 years
Years of working in the Intensive care Unit (ICU): < 10 years ( ) 10-20 years ( ) 21-30 years ( ) > 30 years ( )
Working hours per week: ≤ 40 hours ( ) > 40 hours ( )
Predominant ICU shift type: 6 hours ( ) 8 hours ( ) 12 hours ( ) 24 hours ( )
Number of ICU day shifts per week: 1-2 ( ) 3-4 ( ) 5-7 ( )
Number of ICU night shifts per month: 1-2 ( ) 3-4( ) 5-7( ) > 7 ( )

SECTION B: STRESS LEVEL DETERMINATION

Please read each statement and circle a number 0, 1, 2, 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree or a good part of time
3 Applied to me very much or most of time

I found it hard to rest after a lot of hard work	0 1 2 3
I tended to over react to situations	0 1 2 3
I felt that I was using a lot of nervous energy	0 1 2 3
I found myself getting agitated	0 1 2 3
I found it difficult to relax	0 1 2 3
I was intolerant of anything that kept me from getting on with what I was doing	0 1 2 3
I felt that I was rather touchy	0 1 2 3

SECTION C: WORK-RELATED GENERAL HEALTH

We would like to know if you have had any medical complaints, and how your health has been in general, over the past few weeks at work. Please answer ALL the questions simply by choosing what you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those you had in the past.

Have you been able to concentrate on what you are doing at work?
Better than usual ( ) same as usual ( ) less than usual ( ) much less than usual ( )
Have you lost much sleep over worry due to work?
Not at all ( ) no more than usual ( ) rather more than usual ( ) much more than usual ( )
Have you felt that you are playing a useful part in things at work?
Better than usual ( ) same as usual ( ) less than usual ( ) much less than usual ( )
Have you felt capable of making decisions about things at work?
Better than usual ( ) same as usual ( ) less than usual ( ) much less than usual ( )
Have you felt constantly under strain at work?
Not at all ( ) no more than usual ( ) rather more than usual ( ) much more than usual ( )
Have you felt you could not overcome your difficulties at work?
Not at all ( ) no more than usual ( ) rather more than usual ( ) much more than usual ( )
Have you been able to enjoy your normal day to day activities at work?
Better than usual ( ) same as usual ( ) less than usual ( ) Much less than usual ( )
Have you been able to face up to your problems at work?
Better than usual ( ) same as usual ( ) less than usual ( ) Much less than usual ( )
Have you been feeling unhappy and depressed at work?
Not at all ( ) no more than usual ( ) rather more than usual ( ) much more than usual ( )
Have you been losing confidence in yourself at work?
Not at all ( ) no more than usual ( ) rather more than usual ( ) much more than usual ( )
Have you been thinking of yourself as a worthless person at work?
Not at all ( ) no more than usual ( ) rather more than usual ( ) much more than usual ( )
Have you been reasonably happy at work, all things considered?
Better than usual ( ) same as usual ( ) less than usual ( ) Much less than usual ( )
Do you have any medical condition that your work has caused or worsened?
Yes ( ) No ( )

APPENDIX 2

LAGOS STATE UNIVERSITY TEACHING HOSPITAL
OFFICE OF THE DIRECTOR, CLINICAL SERVICES & TRAINING

INTERNAL MEMO

From: DCST OFFICE | To the Concerned Department

LASUTH/DCST/2018/0104 | Date: 19th September, 2018.

RE: APPROVAL FOR RESEARCH ASSISTANCE
DR. ADEYEMI SAMUEL SOGO

The above subject matter refers, I am directed to inform you that approval has been granted for the above named M.Sc student from University of Port Harcourt to administer questionnaires to nurses and doctors on "OCCUPATIONAL STRESS AND ASSOCIATED FACTORS AMONG INTENSIVE CARE WORKERS'

Kindly accord him all necessary assistance.

Thank you.

ADELAJA A.I (MR)
For: Director of Clinical Services and Training

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